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Text-book of general botany.

ANOTHER work on general botany, of moderate size, and of a grade for use in colleges, has been provided for English students by the translation of Westermaier's recent volume. The translation has been made by Dr. Albert Schneider,[2] and with the exception of occasional aberrations in the use of *shall* and *will*, and some remnants of Teutonic phrases, it is acceptably done.

There are two reasons why this work is likely to meet with favor from a number of teachers. In the first place it intimately combines physiology with morphology and at every step inquires what use the particular cell, tissue, or organ serves. And then it comes from a new source, being dominated by the views of Schwendener and Nägeli, while our text-books heretofore for the most part have represented the views of Sachs and his followers.

The work is of a suitable size for text-book use, but is not to be put into the hands of novices in botany. For students who have passed the rudiments of the science, and who know something of chemistry and physics, and of the current theories of descent, it will prove serviceable, and, moreover, will be more than ordinarily suggestive and inspiring.

The work is not large, but inclines to be compendious, and this has necessarily led to condensing weighty matters into such brief compass that many statements will prove barely intelligible to the ordinary student unless expounded by a teacher.

While the work has many good qualities, there are some features of it that will surely meet with disapproval from well-informed instructors. The author has failed many times to present the latest and most approved views upon disputed or recently settled topics, especially when such views are in opposition to those of the school to which the author belongs. An instance of this is the presentation of Nägeli's theory of the growth of starch grains and cell wall by intussusception to the extent of several pages, while there is barely mention of the fact that there are later and more acceptable theories, and no attempt to outline them or name the investigators. We can, of course, afford to be a little charitable when the author insists upon his own imperfect views regarding the rise of sap in plants, and we have a curiosity to know just to whom or what he refers when he says that "in regard to this question many authors hold erroneous opinions;" but he does not enlighten us.

The trouble which the author takes to show his opposition to the prevailing views in evolution seem strange in such a work, and does not heighten our appreciation of it. There are many out of date points of view and a correspondingly antiquated terminology maintained in the work, *e. g.*, as to the process of photosyntax in the chlorophyll grain, which is called assimilation, although genuine assimilation is also mentioned. Thus we get this highly ambiguous sentence: "The cotyledons begin the function of assimilation as soon as the reserve food is assimilated." Another instance of a similar nature is in regard to reproduction. Although the author states that "the entire phanerogamic plant with its flowers represents the asexual generation," he constantly speaks of male and female flowers, and of the gynœcium and andrœcium as male and female organs.

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[2] WESTERMAIER, MAX.—A compendium of general botany. Translated by Albert Schneider. 8vo. pp. 299. figs. 171. New York: John Wiley and Sons. 1896. $2.00.

There are good things in the book, and we are grateful to the translator for making available for class use a work in which the theories of Schwendener, Nägeli, Haberlandt and their followers are prominent; but it will not do to accept it unthinkingly, even with the translator's footnote corrections. The order of the subjects is as follows: the cell, tissues and simple organs; organs and systems of organs, reproduction, general chemistry and physics of plant life, taxonomy.—J. C. A.

The hardy bamboos.

MR. A. B. MITFORD, author of "Tales of Old Japan," has just given another result of his former residence in Japan in a book entitled "The Bamboo Garden."[3] The book does not profess to be technically scientific, but it is none the less interesting to botanists, containing much information concerning a large and important group of plants. It deals with the hardy bamboos in cultivation in England, thirty-eight of them being from China and Japan, one (*Arundinaria macrosperma*) from the United States, five from the Himalayas, and three whose nativity is uncertain. The Himalaya region is looked upon as likely to be the most productive of new forms, those of China and Japan having been long known and cultivated. The interesting facts concerning their inflorescence are pointed out, especially the fact that it occurs at long intervals of time, and then in a wonderfully simultaneous way over large areas, and results in the death of the plants. The older travelers, observing this phenomenon, have put upon record the often quoted statement that the plants after inflorescence die throughout, and that new growths come from the seed. They speak of great forests of bamboos disappearing in a single season, a serious calamity to communities so very dependent upon it as are the orientals of Eastern Asia. While this wholesale destruction at long intervals does actually occur, new growths spring very rapidly from the widespreading rootstocks. The interval between times of inflorescence was formerly stated definitely as thirty years; but, though infrequent, it varies widely,

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[3] FREEMAN-MITFORD, A.B.—The bamboo garden. 8vo. pp. xii + 224, illustrated by Alfred Parsons. London and New York: The Macmillan Co., 1896. $3.00.